*Hab.* Borneo, at the mouth of the river Lundu.

I may remark, that the comparison of these Lancelets from Naples, Cornwall and Borneo has induced me to think that most probably the species from Naples may be distinct from the Cornish. All our specimens are smaller and more opake; the beards of the mouth appear finer; and the dorsal ridge above referred to appears comparatively smaller, even making allowance for the difference in the size of the specimens.

## A few Remarks on the Geographical Distribution of Birds in the West Indies. By William Denny, Esq.

Humboldt, Vigors, Swainson and other eminent naturalists, lament the defective state of knowledge respecting the zoology of the West Indies. The Flora of Jamaica has been often successfully explored; the geology of a great portion has been investigated by De la Beche; the ornithology and entomology however remain nearly in the state in which they were left one hundred years since by Sir Hans Sloane. In all the departments of the natural history of the Antilles much still remains to the inquirer, but in zoology he has an almost unexplored field for his researches. The region of Tree-ferns has been left unexamined for the botanist, the western half of Jamaica for the geologist; but with the exception of about sixty species of birds noticed by Sloane and Browne, the entire ornithology is unknown*, including all the species peculiar to the mountainous districts.

About thirteen years since an attempt was made to send out a party of naturalists to examine the animals and productions of Jamaica, but it failed; and had the party reached those shores, I doubt that their researches would have thrown much additional light on zoology. The insalubrious nature of the climate in the low grounds, the excessive heat, and many other causes, would probably have rendered their exertions fruitless. The naturalist must alike be familiar with the inhabitants of the deadly swamp and the pathless mountain; he must brave the tropical heat and mountain cold, and the sudden transitions of temperature. It is only those inured to the climate by long residence, and who have had fortitude to resist its debilitating effects, or those born in the country whose habits are active and pursuits congenial, that can sustain these difficulties and dangers.

Placed at nearly equal distance from North and South America, it might be supposed that nearly an equal number of the species of each division of that continent might be found in Cuba and Jamaica. This supposition is not however fully borne out by observation, although from our knowledge of the ornithology of Terra Firma being extremely imperfect, it is difficult to render a conclusion free from error. It will hereafter appear, that of the birds of Jamaica, one-half are common to North America, while hardly one-fifth are also found in the southern region of the New World.

Of those species common to the islands more immediately under

* This want of information has been reduced very considerably at the present moment by the appearance of Mr. Gosse's work 'On the Birds of Jamaica.'

notice, and Mexico, a great identity of genera and species might be expected. Placed in the same degree of latitude, possessing many similar features in scenery, elevation, temperature and productions, with sufficient facility of communication for the feathered tribes, they might, without actual examination, be considered as constituting the same animal kingdom or province. But Mexico is united to the southern portion of the continent by land, while Jamaica is separated by leagues of sea, a great natural impediment to families possessing feeble powers of flight.

Wilson remarks that "in passing along the chain of the Bahamas, towards the West Indies, no great difficulty can occur from the frequency of these islands, nor even to the Bermudas, which are said to be six hundred miles from the nearest point of the continent." Whether this facility of communication between the United States and the greater Antilles may be sufficient to account for the greater preponderance of species from this division than from the southern, may by some be doubted; but it may be as well to bear in mind that the Raptores and long-winged families of the Insessores are common both to the States and Antilles, while the short-winged families are nearly all distinct.

There are many features of resemblance between the ornithology of Mexico and the great Antilles. Nearly all the birds common to the former and the United States are likewise found in Jamaica, while the latter possesses species supposed by Mr. Swainson to be peculiar to Mexico, and I believe that further investigation will tend to show that the distribution of species is very similar.

I will only make one remark, that many birds supposed to belong to the States are in reality tropical or West Indian, and merely very transient and in numerous instances accidental visitors to North America. For example, the *Columba Zenaida* is very rare in the States, while in Jamaica it is the most abundant species in the island, and was mentioned by Sir Hans Sloane.

I will pass over the migration of birds to and from the West Indies, as well as the influence that natural families of plants appearing in distant countries may have in producing it, as being beyond the limits which I have assigned to myself in these observations. I will now give a catalogue of all the birds that I have met with during a sojourn of six years in Jamaica, during which time my leisure hours have been constantly devoted to pursuits connected with natural history.

Birds common to Jamaica, Cuba, and the United States.

*Land Birds.*

1. Cathartes aura.
2. Buteo borealis.
3. Circus americanus.
4. Haliaëtus niger.
5. Accipiter pensylvanicus.
6. Pandion haliaëtus (? carolinensis.)
7. Strix flammea.
8. —— asio.
9. Hirundo fulva.

10. Caprimulgus carolinensis.
11. —— americanus.
12. Alcedo alcyon.
13. Tyrannus intrepidus.
14. Muscicapa ruticilla.
15. —— virens.
16. —— fusca.
17. —— crinita.
18. Vireo-olivacea.
19. Merula minor.
20. —— mustelinus.
21. Orpheus polyglottus.
22. Sciurus aurocapillus.
23. Trichas personatus.
24. Sylvicola pusilla.
25. —— americana.
26. —— canadensis.
27. —— minuta.
28. —— pensilis.
29. Sylvicola coronata.
30. —— maculosa.
31. Vermivora solitaria.
32. Fringilla tristis.
33. —— Zevanna.
34. Dolichonyx oryzivorus.
35. Sturnella magna.
36. Icterus versicolor.
37. Corvus ossifragus.
38. Picus carolinensis.
39. Cuculus carolinensis.
40. Certhia maculata.
41. Columba leucocephala.
42. —— passerina.
43. Ortyx marylandus.
44. Tyrannula Saya.
45. Columba carolinensis (Cuba only).

Birds of Jamaica and Cuba observed in Terra Firma, but unknown in North America.

1. Sarcoramphus papa (accidental).
2. Polyborus brasiliensis.
3. Circus rutilans.
4. Muscicapa ferox.
5. Icterus dominicensis.
6. Trochilus furcatus.
7. Crotophaga ani.

Birds peculiar to the West Indies, and seldom if ever detected in the United States or Terra Firma.

[These birds have been observed in Jamaica and Cuba.]

1. Accipiter fringilloides, *Vig.*
2. Falco sparveroides, *Vig.*
3. Hirundo thalassinus, *Sw.*
4. —— Tapera, *Linn.*
5. —— albicollis, *Vieil.*
6. —— melanogaster, *Sw.*
7. —— (undetermined).
8. Caprimulgus jamaicensis, *Bris.*
9. Todus viridis, *Linn.*
10. Merula jamaicensis, *Linn.*
11. —— fusca vel leucophthalma (undescr.).
12. —— dominicus, *Linn.*
13. —— rubripes, *Temm.*
14. Sylvicola dominica, *Linn.*
15. Pyrrhula nigra, *Linn.*
16. —— collaris, *Vig.*
17. Fringilla Zena.
18. —— noctis, *Linn.*
19. —— jamaicensis, *Linn.*
20. —— bicolor, *Linn.*
21. —— lepida, *Linn.*
22. Carduelis mexicana, *Sw.*
23. Icterus bonano, *Linn.*
24. —— cucullatus, *Sw.*
25. —— mexicanus, *Linn.*
26. —— brasiliensis, *Linn.*
27. —— mexicanus*.
28. —— baritus, *Linn.*
29. Leistes humeralis, *Vig.*
30. Corvus jamaicensis, *Linn.*
31. Trogon temnurus, *Temm.*
32. Psittacus leucocephalus, *Linn.*
33. —— æstivus, *Linn.*
34. Psittacara nana, *Vig.*

* Icterus xanthornis.

35. Picus carolinus, *Linn.*
36. —— percussus, *Vig.*
37. Colaptes auratus, *Vieil.*
38. —— Fernandina, *Vig.* (Cuba only).
39. —— superciliaris, *Temm.* (Cuba).
40. Cuculus vetula, *Linn.*
41. —— pluvialis, *Gm.*
42. Certhia flaveola, *Linn.*
43. —— maculata, *Wils.*
44. Cynanthus polytmus, *Linn.*
45. —— minimus, *Linn.*
46. Lampornis mango, *Linn.*
47. Columba Caribbæa, *Gmel.*
48. —— inornata, *Vig.*
49. Columba montana, *Linn.*
50. —— jamaicensis, *Linn.*
51. —— leucoptera, *Linn.*
52. —— minuta, *Linn.*
53. —— sylvestris?
54. —— martinica, *Linn.*
55. —— Zenaida, *Buon.*
56. —— cyanocephala, *Linn.* (Cuba only).
57. { Numida meleagris, *Linn.* / —— maculipennis, *Sw.*
58. Tanagra gularis.
59. Sitta jamaicensis (not of Sloane or Browne).
60. Pipillo maculata, *Sw.*

*Note.*—Many of the above species have not been referred to modern genera on account of several of them being proposed from data so different that it is difficult for a Transatlantic naturalist to select from such eminent authorities as Vieillot, Swainson, Buonaparte, Cuvier or Temminck. When no authority is given, the nomenclature is that of Wilson.

### *Water Birds.*

The following species, with one or two exceptions, seem equally distributed over the United States, Mexico, Jamaica and Terra Firma, so that no division of them will be necessary.

#### Ardeidæ.

Ardea virescens.
—— ludoviciana.
—— cærulea.
—— abba.
—— exilis.
—— candidissima.
—— herodias.
Nycticorax violacea.
—— Gardenii.
Botaurus minor.
Platalea ajuga.
Phœnicopterus ruber (Amer.).

#### Tantalidæ.

Ibis rubra.
—— alba.
Tantalus loculator.

#### Scolopacidæ.

Scolopax gallinago (Amer.).
Scolopax grisea.
—— minor.
Totanus macularius.
—— chloropygius.
—— flavipes.
—— semipalmata.
Tringa rufescens.
—— pectoralis.
—— minutella.
—— pusilla.
Numenius longirostris.

#### Charadriadæ.

Charadrius semipalmatus.
—— vociferus.
—— apricarius.
—— monnellus.
—— pluvialis.
—— melodus.
Squatarola cinerea.
Himantopus melanopterus.

RALLIDÆ.

Rallus minutus.
—— jamaicensis.
—— virginianus.
Aramus scolopaceus.
Parra Jacana.
—— variabilis.
Gallinula Galatea.
—— Martinica.

## NATATORES.

ANATINÆ.

Dendronessa sponsa.
Boschas fera.
—— crecca (Amer.).
—— discors.
—— discors occident.
Dafila caudacuta.
Chauliodus streperus.
Anas clypeata.
Mareca americana.
Anas ? fistularis.

FULIGULINÆ.

Fuligula marita.
—— cristata.
Anas ? jamaicensis.
Anas ? spinosa.
Anas ? dominica.
Podiceps cristatus.
—— auritus.

PELECANIDÆ.

Pelecanus fuscus.
Tachypetes aquilus.
Phaëton æthereus.

LARIDÆ.

Larus atricilla.
—— argentatus.
—— parasiticus.
Sterna fuliginosa.
—— minuta.
—— stolida.
Thalassidroma pelagica.
—— Wilsonii.

*Note.*—I have been guilty of discourtesy to some authors by excluding species from the catalogue which are assigned to Jamaica in their works. I have never discovered them, and I must plead that they may still reward my more successful researches. I have not included St. Domingo (Haiti) in my list, as I have no local knowledge of its ornithology, but from the writings of Vieillot it appears more extensive than either Cuba or Jamaica.

Regarding an ornithological province as a portion of the earth containing in it a greater number of land species peculiar to, and not extending beyond it, than of those common to it and adjoining countries, it may be asked—Are the greater Antilles a distinct ornithological province, or merely a portion of that of Mexico or the United States ?

There are however curious differences in the birds of the several West Indian islands. Trinidad has a diversified ornithology, apparently identical with the South American continent. Many of the pigeons, woodpeckers and humming-birds differ. The *Columba carolin.* extends to Cuba and Haiti, but not to Jamaica. The *Col. Caribbæa* appears confined to the latter. The *Lampornis mango* of Jamaica is represented in Haiti by *gramineus.* There appears in the former island only one woodpecker, the *Picus carolin.*, while in Cuba

and Haiti there are several. Geological researches may assist the explanation of these anomalies. There are three mountain-ranges of different date and vegetation. One of these constitutes the Bahamas, north side of Haiti and Cuba: the Cibao range, covered with pathless forests of *Pinus occidentalis*, re-appears in Cuba and the Isle of Pines, terminating in Mexico. The precipitous mountains of the Grand Anse are formed of limestone, which is prolonged through Jamaica into Yucatan, covered with its peculiar production, *Myrtus Pimenta*, equally remarkable for its individual beauty and fragrance.

"Pauca hæc vidimus operum Dei."

April 13.—William Yarrell, Esq., Vice-President, in the Chair.

The following communication was read:—

### Some Observations on the Skull of Phascolomys Vombatus. By J. E. Gray, Esq., F.R.S. etc. etc.

In the collection at the British Museum there are three skulls which agree with Prof. Owen's character of *Phascolomys Vombatus*, as described in vol. iii. of the Zool. Soc. Transactions: that is to say, they have only slightly curved upper cutting teeth, short noses, &c. Two were sent from Van Diemen's Land by Mr. Ronald Gunn, and one from N. S. Wales was presented by my late friend and admirable botanist, Mr. Allan Cunningham, F.L.S.

The specimens from Van Diemen's Land are much smaller (the largest being 6 in. 4 lines long), and more depressed and truncated behind, and have two moderate-sized oblong holes in the hinder part of the palate. The specimen from N. S. Wales is one inch longer, and has two large triangular holes in the end of the palate. All the three specimens differ in the size of the teeth, and especially in the size and relative position of the upper cutting teeth.

1. The least of the Van Diemen's Land skulls has rather small grinders, but the upper cutting teeth are small, compressed, rather diverging from each other, forming an angle in front and only touching each other at the truncated inner edge. The crowns of these teeth are 5 lines long and $2\frac{1}{2}$ lines wide. The lower cutting teeth are small with a roundish crown.

2. The other Van Diemen's Land skull, which is rather larger in all its measurements, has larger grinders. The cutting teeth are much larger: the upper large, oblong, diverging from each other, forming together a segment of a circle in front, and only touching each other by the inner edge. The crowns of these teeth are $5\frac{1}{2}$ lines long and $3\frac{1}{2}$ lines wide.

3. The skull from N. S. Wales has the teeth very like those of the small Van Diemen's Land specimen, but rather larger: the upper cutting teeth are considerably larger and rather more triangular, but in the same angular position.

It is desirable that more of these skulls should be compared, to determine whether these are only individual variations, or that there